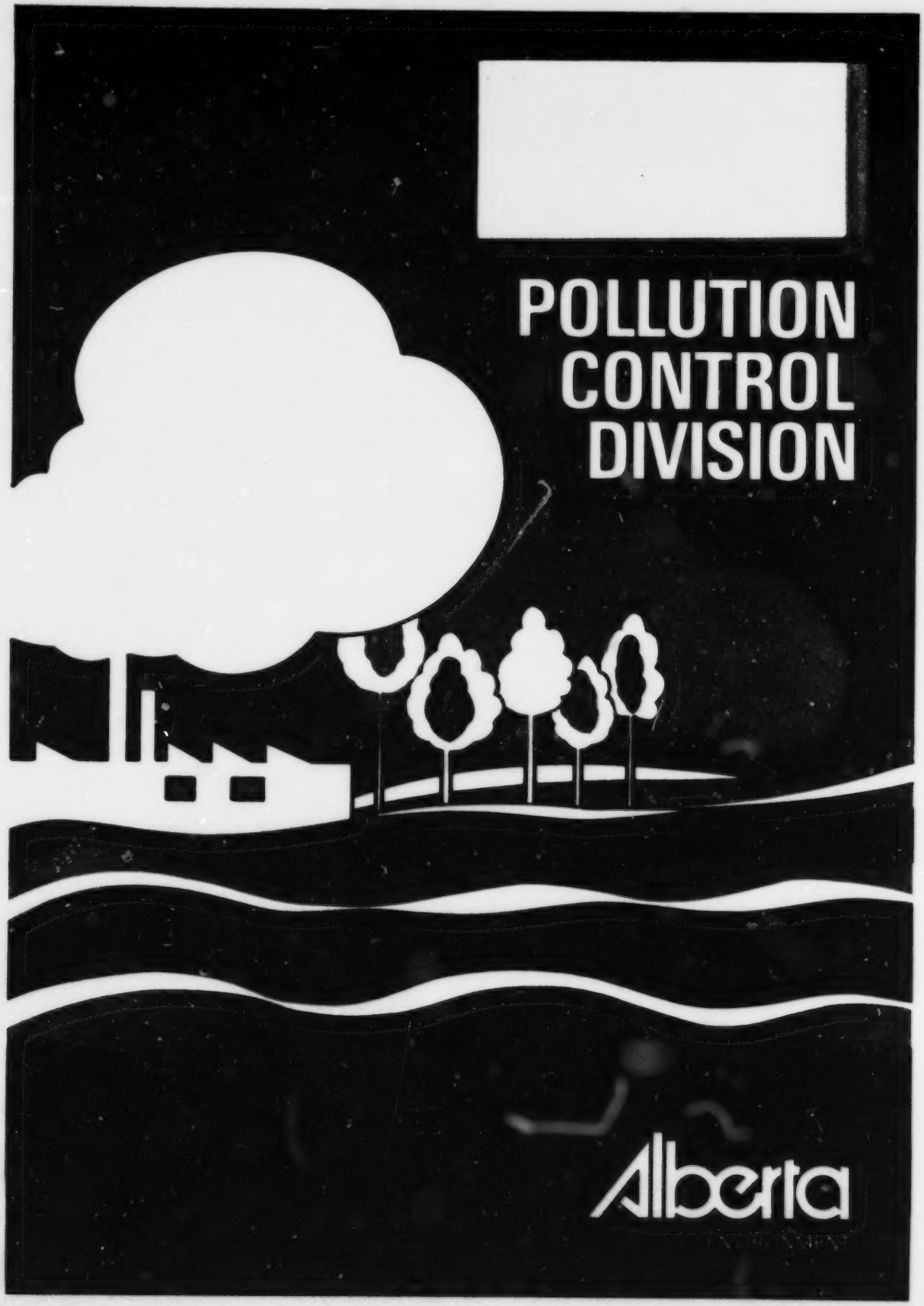
POLLUTION
CONTROL
DIVISION
Alberta

TREATED WATER SURVEY

CALGARY, EDMONTON, DRUMHELLER

FORT MCMURRAY, GRANDE PRAIRIE

LETHBRIDGE, MEDICINE HAT, RED DEER

CLDS, CAMROSE, WETASKIWIN

1984

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Alberta Environment

ABSTRACT

This is the fifth summary of an ongoing survey of the treated water of Alberta's major municipalities, namely Calgary, Camrose, Drumheller, Edmonton, Fort McMurray, Grande Prairie, Lethbridge, Medicine Hat, Olds, Wetaskiwin and Red Deer. This summary is for the period of January 1984 to December 1984. Parameters recorded throughout the study included heavy metals, herbicide acids, chlorinated pesticides, PCB's, trihalomethanes, organophosphorus, organonitrogen, priority pollutants, mercury, pH, conductivity, iron, calcium, total dissolved solids (T.D.S.) and other general water chemistry parameters.

Samples of treated water were obtained from the distribution system at a point well away from the water treatment plants. A total of approximately 31,800 parameters were analysed from 156 samples. Results are provided in tabular form.

This survey indicated that, with regards to the parameters tested, all locations have potable water.

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1. INTRODUCTION

In June 1978, the Municipal Engineering Branch of the Pollution Control Division, Environmental Protection Services, Department of Environment, began sampling the treated water of the four major cities of Lethbridge, Calgary, Red Deer and Edmonton in order to obtain background levels and to check for possible contaminants. In October 1980, Drumheller, Medicine Hat and Grande Prairie were added to the list of sampling sites and in June 1982, Fort McMurray also was added. In January of 1984 Camrose, Wetaskiwin, Olds (representing Red Deer Corridor), and both plants (instead of one) from Edmonton and Calgary were added to the list of sample sites. This summary is for the period of January 1984 to December 1984.

The sampling was done monthly for routine parameters and selected parameters considered possible health hazards and for which analysis technology was available. The analyses were done by the Alberta Environmental Centre in Vegreville.

In keeping with the purpose of the survey, a wide range of parameters, both organic and inorganic in nature, were selected to assess potential hazard to human health as a result of treated water consumption. The inorganic chemicals of concern consisted of a number of metals and some ions with established health significance. Organic compounds consisted primarily of a variety of pesticides and other synthetic chemicals known to be in common use or produced by the water treatment process. Several other constituents were monitored because of their impact on the aesthetic properties of water rather than for health-related concerns.

2. SAMPLING

All sampling was done by Municipal Engineering Branch staff. Continuity in sampling, handling and preserving techniques, as required by the analyzing laboratory for accurate testing, was thereby insured.

Sampling and testing of the treated water was scheduled on a regular basis with sample collection occurring approximately monthly.

Since it was desirable to test the same treated water reaching the majority of consumers and because some of the tested parameters were a result of treatment and storage within the system, (ie. Haloforms), the sampling points were chosen as locations reflecting increased residence times of the water in the systems.

All samples were collected and immediately delivered to the Alberta Environmental Centre Laboratory in person or via a courier service. This insured that any delays which might affect the analysis were kept to a consistent minimum.

Table I shows a breakdown of the parameters analyzed. Chlorinated pesticides, organophosphorous, organonitrogen, PCB's and herbicide acids are recorded on the municipality summary tables as a group.

Table II lists the priority pollutants analyzed divided into Extractable and Purgeable and are recorded on the municipality tables as priority pollutants using the Summary Code number for identification. If L.D. appears after the summary code for that parameter, then the parameter was detected at less than the detection limit.

All the other parameters analyzed for are listed on the municipality tables.

TABLE I

SAMPLE & PARAMETERS

SAMPLE	Parameter
Routine	pH, Conductivity, Iron, Calcium, T.D.S., Magnesium, Hardness Total, Sodium, Potassium, NO_2 & NO_3, Nitrite, Fluoride, Chloride, Sulfate, Bicarbonate, Alkalinity Total, Silica and Carbonate.
Heavy Metals	Cobalt, Copper, Nickel, Cadmium, Lead, Zinc, Beryllium, Aluminum, Arsenic, Selenium, Manganese, Chromium, Vanadium, and Molybdenium
Volatile Haloforms	Trichloromethane (Chloroform), Bromodifloromethane, Dibromochloromethane, and Tribromomethane (Bromoform).
Mercury	Inorganic Mercury (free or complexed) and organomercury compounds.
Carbon	Total organic carbon, total inorganic carbon and total carbon.
Organophosphorus	Aspon, Crufomate (Ruelene), Dasanit (Fensulfothion) DDVP (Dichlorovos, Vapona), DEF, Demeton (Systox), Dimethoate (Cygon), Di-Syston (Disulfoton), Ethion, Fenthion, Fenitrothion, Fonofos (Dyfonate), Guthion, Malathion, Methyl Parathion, Methyl Trithion, Mevinphos (Phosdrin), Mocap, Paraoxon, Parathion, Phorate (Thimet), Ronnel (Fenchlorphos), Tetrachlorvinphos (Gardona).
Organonitrogen	Atrazine, Aminocarb (Matacil), Bromacil (Isocil), Cobex (Dinitramine), Cyanazine, Diazinon, Metribuzin, Prometryne, Propanil, Propazine, Simazine, Terbacil, Trifluralin (Treflan).
Chlorinated Biphenyls	Arochlor 1016, Arochlor 1221, Arochlor 1232, Arochlor 1242, Arochlor 1248, Arochlor 1254, Arochlor 1260, Arochlor 1262, Arochlor 1268.
Chlorinated Herbicide Acids	2,4-D, Dicamba, Diclofop-methyl (Hoe Grass), MCPA, Picloram, 2,4,5-T.

TABLE I continued

SAMPLE & PARAMETERS

SAMPLE	Parameter
Chlorinated Pesticides	Aldrin, a-Chlordane, y-Chlordane, Captan, Dacthal (Chlorthal Methyl), o,p' - DDD, p,p' - DDD, o,p' - DDE, p,p' - DDE, o,p' - DDT, p,p' - DDT, Diallate (Avadex), Dieldrin, Dursban (Lorsban, Chlorpyrifos), a-Endosulfan, B-Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Hexachlorobenzene (HCB), a-Hexachlorocyclohexane, B-Hexachlorocyclohexane, y-Hexachlorocyclohexane, (Lindane), S-Hexachlorocyclohexane, Kelthane (Dicofol), Methoxychlor, Mirex, Perthane, Ramrod (Propachlor), Triallate (Avadex BW).

TABLE II - PRIORITY POLLUTANTS

COMPOUND	SUMMARY CODE
ACID GROUPS	
Benzoic Acid	A1
4-Chloro-m-cresol	A2
2-Chlorophenol	A3
2,4-Dichlorophenol	A4
2,4-Dimethylphenol	A5
4,6-Dinitro-o-cresol	A6
2,4-Dinitrophenol	A7
Hexadecanoic acid	A8
2-Nitrophenol	A9
4-Nitrophenol	A10
Pentachlorophenol	A11
Phenol	A12
2,4,5-Trichlorophenol	A13
2,4,6-Trichlorophenol	A14
BASE NEUTRAL GROUP	
Polynuclear Aromatics	
Acenaphthene	B1
Acenaphthylene	B2
Anthracene	B3
Benz(a)anthracene	B4
Benzo(k)fluoranthene	B5
Benzo(ghi)perylene	B6
Benzo(a)pyrene	B7
Chrysene	B8
Dibenz(ah)anthracene	B9
Fluoranthene	B10
Fluorene	B11
Indeno(1,2,3-cd)pyrene	B12
Naphthalene	B13
Perylene	B14
Phenanthrene	B15
Pyrene	B16
Chloroorganics	
Chlorobenzene	B17
2-Chloronaphthalene	B18
1,2-Dichlorobenzene	B19
1,3-Dichlorobenzene	B20
1,4-Dichlorobenzene	B21
Hexachlorobenzene	B22
Hexachlorobutadiene	B23
Hexachlorocyclopentadiene	B24
Hexachloroethane	B25
1,2,4-Trichlorobenzene	B26

COMPOUND	SUMMARY CODE
Nitroaromatics	
Benzidine	N1
3,3'-Dichlorobenzidine	N2
2,4-Dinitrotoluene	N3
2,6-Dinitrotoluene	N4
1,2-Diphenylhydrazine	N5
Nitrobenzene	N6
N-Nitrosodimethylamine	N7
N-Nitrosodiphenylamine	N8
N-Nitrosodi-n-propylamine	N9
Halo ethers	
4-Bromophenyl phenyl ether	N11
Bis(2-chloroethoxy)methane	N12
Bis(2-chloroethyl)ether	N13
Bis(2-chloroisopropyl)ether	N14
2-Chloroethyl vinyl ether	N15
4-Chlorophenyl phenyl ether	N16
Phthalate Esters	
Butylbenzyl phthalate	N17
Di-n-butylphthalate	N18
Diethylphthalate	N19
Dimethylphthalate	N20
Di-n-octylphthalate	N21
Bis(2-ethylhexyl)phthalate	N22
PURGEABLE GROUP	
Benzene	P1
Bromodichloromethane	P2
Bromoform	P3
Carbon tetrachloride	P4
Chlorobenzene	P5
Chloroform	P6
Dibromochloromethane	P7
1,2-Dichlorobenzene	P8
1,3-Dichlorobenzene	P9
1,4-Dichlorobenzene	P10
1,1-Dichloroethane	P11
1,1-Dichloroethylene	P12
trans-1,2-Dichloroethylene	P13
trans-1,3-Dichloropropylene	P14
Ethyl benzene	P15
Methylene chloride	P16
1,1,2,2-Tetrachloroethane	P17
Tetrachloroethylene	P18
Toluene	P19
Trichloroethylene	P20
Trichlorofluoromethane	P21
o-Xylene	P22
m-Xylene	P23
p-Xylene	P24

Detection limit for ACID and BASE NEUTRAL GROUPS 1.0µg/L

3.RESULTS

Each site is sampled monthly with 204 parameters being analysed. The survey consists of approximately 31,800 parameters analyzed from 156 samples. The parameters that exceeded the maximum acceptable concentrations from the "Guidelines for Canadian Drinking Water Quality 1978" are as follows: copper, two times; lead, one time; pH, five times; iron, one time; and manganese, four times. Although no parameter which exceeds the levels as set out by the "Guidelines for Canadian Drinking Water Quality 1978" is desirable, the concentration and frequency for the above parameters are not extreme and do not indicate a problem.

In the appendix the values for the parameters analyzed are given. Occasionally no value is given and instead NOT DONE has been inserted. This means the analysis was not done for any one of the following reasons; no sample taken, not requested on request sheet, improperly sampled, broken or spilt sample, sample lost, sample contaminated, A.E.C. testing equipment malfunctioned, A.E.C. equipment being repaired and sample discarded, sample froze.

4. CONCLUSIONS

The drinking water for the eleven communities surveyed is of very good quality and poses no health or aesthetic problems with regards to the 204 parameters used to monitor the quality of water.

APPENDIX

TREATED WATER SURVEY
CALGARY - BEARSPAW

Date	Feb 14/84	Mar 13/84	Apr 23/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 05/84	Oct 10/84	Nov 14/84	Dec 12/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.003	0.001*	0.001*	0.001*	0.004
Copper	0.001*	0.001*	0.003	0.001*	0.001*	0.002	0.003	0.002	0.001*	0.001*	0.005
Nickel	0.001*	0.005	0.008	0.001*	0.001*	0.004	0.001*	0.001	0.004	0.003	0.008
Cadmium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.002
Lead	0.003*	0.004	0.003*	0.005	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*
Zinc	0.012	0.014	0.010	0.013	0.036	0.061	0.012	0.024	0.022	0.015	0.033
Beryllium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Aluminum	0.030	0.074	0.040	0.022	0.296	0.037	0.292	0.236	0.020*	0.041	0.055
Arsenic	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0003	0.0002*
Selenium	0.0002*	0.0002*	0.0002*	0.0002*	NOT DONE		0.0002*	0.0002*	0.0002*	0.0002*	0.0002*
Manganese	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*
Chromium	0.001*	0.001*	0.003	0.005	0.003	0.001*	0.006	0.003	0.003	0.001*	0.008
Vanadium	0.002*	0.002*	0.002*	0.002*	0.002*	0.002*	0.005	0.003	0.002*	0.002*	0.004
Molybdenium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.006
Mercury	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*
DOC				NOT DONE				0.7	2.1	0.4*	0.4*
TC (Partic)				NOT DONE				0.84	0.84	0.65	0.74
DIC				NOT DONE				24.4	27.3	29.7	31.2
pH	8.2	8.3	8.5	8.4	7.7	8.1	7.9	8.0	8.2	8.2	8.3
Conductivity	318	322	307	319	289	234	248	258	285	312	317
Iron	0.07	0.03	0.02	0.02*	0.02*	0.02*	0.02*	0.02*	0.02*	0.02*	0.02*
Calcium	44	42	39	42	38	29	29	33	35	41	45
TDS	172	170	160	172	158	129	129	135	148	168	177
Magnesium	11	11	11	12	11	9	10	10	11	12	13

TREATED WATER SURVEY
CALGARY BEARSPAW

Date	Feb 14/84	Mar 13/84	Apr 23/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 05/84	Oct 10/84	Nov 14/84	Dec 12/84
Hardness T	155	150	143	154	140	109	114	124	133	152	166
Sodium	1*	2	2	2	2	2	1*	1*	1*	2	2
Potassium	0.3	0.4	0.4	0.4	0.5	0.4	0.3	0.3	0.4	0.5	0.5
NO_2 & NO_3	0.08	0.05*	0.05*	0.05*	0.05*	0.07	0.05*	0.05*	0.05*	0.05*	0.05*
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Fluoride	0.15	0.14	0.15	0.14	0.12	0.08	0.12	0.10	0.13	0.14	0.13
Chloride	2	1*	2	2	2	2	1*	3	2	1*	2
Sulfate	38	37	32	36	36	37	27	26	32	36	38
Bicarbonate	154	156	141	150	138	100	122	125	134	153	155
Alkalinity T	126	128	122	128	114	82	100	102	110	125	127
Silica	2.9	2.9	2.5	2.6	2.7	2.5	2.4	2.3	2.3	2.9	3.0
Carbonate	NOT DONE	NOT DONE	5*	5*	. . . . .			NOT DONE	. . . . .		
Herb Acids	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chlorinated pesticides	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PCB's	NOT DONE	N.D	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chloroform	0.0064	0.011	0.016	0.017	0.017	0.023	0.020	0.025	0.020	0.013	0.021
Bromodi-chloromethane	0.0006	N.D.	N.D.	0.002	0.004	0.001	0.0009	0.0013	0.0012	0.0013	0.001
Dibromo-chloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Bromoform	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

TREATED WATER SURVEY
CALGARY BEARSPAW

Date	Feb 14/84	Mar 13/84	Apr 23/84	May 23/84	Jun 13/84	Jul 04 84	Aug 08/84	Sep 05/84	Oct 10/84	Nov 14/84	Dec 12/84
Other											
OrganoP/ OrganoN	NOT DONE	N.D.	N.D.	N.D.	N.D.	N D	N.D.	N.D.	N.D.	N.D.	N.D.
Priority Pollutants	P1-0.001	N18-L.D. N22-0.0012 P1 L.D. P19-L.D.	P1 L.D. P19 L.D. N18 L.D. N20 L.D. N21 0.0028 N22 0.0011	N18 L.D. N22 0 016	A8 L.D. N18 L.D. N22 0.0021	N22 0.0016	N22 L.D.	N18-L D. N22-0.0025	A8 L.D. N18-L.D. N22 L.D.	N18-L.D. N22-L.D.	P15-0.0003 P25-0.0003

All parameters in mg/L except pH which is in pH units and Conductivity which is in microsiemens/cm.

N.D. - Not Detectable

L.D. - Detected at less than measurable limits

* - Less Than

TREATED WATER SURVEY
CALGARY - GLENMORE

Date	Jan 10/84	Feb 14/84	Mar 13/84	Apr 17/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 05/84	Oct 10/84	Nov 14/84	Dec 12/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.007	0.001*	0.001*	0.001*	0.006
Copper	0.011	0.002	0.002	0.006	0.003	0.004	0.002	0.009	0.001*	0.003	0.002	0.008
Nickel	0.007	0.004	0.003	0.009	0.005	0.003	0.003	0.006	0.001*	0.001*	0.003	0.010
Cadmium	0.002	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.003	0.001*	0.001*	0.001*	0.002
Lead	0.003*	0.003*	0.003*	0.003*	0.006	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*
Zinc	0.005	0.001*	0.004	0.003	0.004	0.007	0.007	0.005	0.003	0.017	0.004	0.019
Beryllium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Aluminum	0.050	0.030	0.074	0.045	0.263	0.290	0.314	0.046	0.060	0.040	0.046	0.065
Arsenic	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0003	0.0002*	0.0003	0.0006	0.0003	0.0003	0.0002*
Selenium	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	NOT DONE		0.0002*	0.0002*	0.0002*	0.0002*	0.0002*
Manganese	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*
Chromium	0.001*	0.001*	0.001*	0.004	0.001*	0.003	0.003	0.011	0.005	0.001*	0.001*	0.009
Vanadium	0.002*	0.002*	0.002*	0.002*	0.002*	0.002*	0.002*	0.008	0.003	0.002*	0.002*	0.006
Molybdenium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.007	0.004	0.001*	0.001*	0.008
Mercury	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*
DOC					NOT DONE				1.2	1.4	0.04*	1.8
TC(Partic)					NOT DONE				0.97	0.26	4.76	0.75
DIC					NOT DONE				28.6	35.2	37.4	40.0
pH	8.1	8.0	8.1	8.3	8.2	8.0	8.1	8.3	8.2	8.2	8.2	8.1
Conductivity	465	469	465	431	403	390	352	327	335	365	409	433
Iron	0.03	0.07	0.02*	0.04	0.02*	0.02*	0.02*	0.02*	0.02*	0.06	0.02*	0.02*
Calcium	60	62	63	56	53	54	47	43	45	47	55	61
TDS	258	254	261	237	227	224	199	183	184	204	237	243
Magnesium	18	17	17	15	15	15	13	14	10	15	17	18

TREATED WATER SURVEY
CALGARY - GLENMORE

Date	Jan 10/84	Feb 14/84	Mar 13/84	Apr 17/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 05/84	Oct 10/84	Nov 14/84	Dec 12/84
Hardness T	224	225	227	202	194	197	171	165	154	179	207	226
Sodium	4	3	5	4	3	2	1*	1*	1*	2	4	3
Potassium	0.9	0.7	0.9	0.8	0.8	0.8	0.6	0.6	0.4	0.7	0.8	0.8
NO_2 & NO_3	0.08	0.10	0.10	0.05*	0.05*	0.06	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Fluoride	0.27	0.28	0.26	0.26	0.25	0.26	0.24	0.25	0.26	0.28	0.30	0.28
Chloride	3	3	4	4	3	3	2	1*	3	2	3	3
Sulfate	67	64	69	66	67	66	55	54	54	60	66	60
Bicarbonate	213	212	207	185	175	168	162	137	140	157	185	197
Alkalinity T	175	174	170	152	143	138	133	120	116	128	152	162
Silica	4.3	4.3	4.0	3.2	2.9	2.9	3.5	3.8	3.8 *	3.9	4.1	4.4
TN (Partic)	. . . . . NOT DONE								0.38	0.01*	0.91	0.02
Herb Acids	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D	N.D.	N.D.	N.D.	N.D.
Chlorinated Pesticides	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D	N.D.	N.D.	N.D.	N.D.
PCB's	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chloroform	0.008	0.010	0.013	0.017	0.020	0.015	0.040	0.023	0.023	0.022	0.021	0.024
Bromodi-chloromethane	N.D.	N.D.	N.D.	N.D.	0.002	0.004	0.005	0.0015	0.0012	0.0016	0.0017	N.D.
Dibromo-chloromethane	N.D.	N.D.	0.0002	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Bromoform	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

TREATED WATER SURVEY
CALGARY - GLENMORE

Date	Jan 10/84	Feb 14/84	Mar 13/84	Apr 17/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 05/84	Oct 10/84	Nov 14/84	Dec 12/84
Other												
OrganoP/ OrganoN	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.	N D	N.D.	N.D	N.D.	N.D.	N.D.
Priority Pollutants	A8-L.D. N18-L.D. N22-L.D.	NOT DONE	P1-L.D. N18-L.D. N22 0.0013	P1 L.D. P19 L.D N20 L.D. N21 L.D. N22 L.D	N D.	N22 L.D.	A8 L.D. N22 L.D	N D	N18 L.D. N22 0.001	A8 L.D. N18-L.D. N22 0.0015 P22 0.0001	N22-L.D.	N18 L.D. N22-L.D.

All parameters in mg/L except pH which is in pH unit, and Conductivity which is in microsiemens/cm.

N.D. Not Detectable

L.D. Detected at less than measurable limits

* Less Than

[redacted]
Pollution Control Division
Alberta Environment

TREATED WATER SURVEY
CAMROSE

Date	Jan 12/84	Feb 15/84	Mar 13/84	Apr 18/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 06/84	Oct 11/84	Nov 14/84	Dec 12/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.005*	0.004
Copper	0.281	0.195	0.095	1.750	0.081	0.077	0.074	0.376	0.079	0.109	0.055	0.040
Nickel	0.006	0.008	0.009	0.010	0.009	0.009	0.010	0.008	0.011	0.016	0.022	0.019
Cadmium	0.001*	0.001*	0.001*	0.001*	0.002	0.001*	0.001*	0.002	0.001*	0.001*	0.002	0.002
Lead	0.005	0.004	0.003	0.006	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*
Zinc	0.009	0.008	0.004	0.016	0.007	0.006	0.005	0.005	0.005	0.013	0.006	0.015
Beryllium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Aluminum	0.060	0.040	0.056	0.031	0.020*	0.020*	0.020*	0.046	0.020*	0.020*	0.044	0.055
Arsenic	0.0004	0.0002*	NOT DONE	0.0004	0.0004	0.0005	0.0005*	0.0004	0.0011	0.0010	0.0011	0.0009
Selenium	0.0002*	0.0002*	NOT DONE	0.0002*	0.0002*	NOT DONE		0.0002*	0.0002*	0.0004	0.0002*	0.0002*
Manganese	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*
Chromium	0.001*	0.001*	0.008	0.001*	0.006	0.003	0.004	0.005	0.004	0.003	0.010	0.007
Vanadium	0.003	0.003	0.005	0.002*	0.003	0.004	0.005	0.003	0.003	0.002*	0.009	0.006
Molybdenium	0.001*	0.001*	0.001*	0.001*	0.004	0.001*	0.004	0.006	0.007	0.006	0.007	0.006
Mercury	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*
DOC	NOT DONE	16.3	16.8	NOT DONE	12.5	11.9	10.0	13.1	14.4	14.4	14.0	16.8
TC (Partic)	NOT DONE	0.06	0.12	NOT DONE	0.64	0.87	0.20	0.29	1.13	1.27	0.72	0.95
DIC	NOT DONE	79.0	87.6	NOT DONE	58.7	66.6	70.3	60.0	57.1	59.6	65.9	26.7
pH	8.1	7.8	7.7	8.1	7.8	7.8	7.6	8.5	7.8	8.0	8.2	7.8
Conductivity	780	862	914	556	657	699	739	654	611	641	693	738
Iron	0.02*	0.06	0.03	0.05	0.02*	0.02*	0.02*	0.02*	0.02*	0.02*	0.04	0.05
Calcium	70	76	84	44	50	59	70	45	50	51	60	53
TDS	467	521	546	324	374	405	447	390	365	381	418	432
Magnesium	25	26	28	14	18	19	22	25	12	14	17	20

TREATED WATER SURVEY
CAMROSE

Date	Jan 12/84	Feb 15/84	Mar 13/84	Apr 18/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 06/84	Oct 11/84	Nov 14/84	Dec 12/84
Hardness T	278	297	325	167	199	225	265	215	174	185	220	215
Sodium	65	68	76	53	54	59	68	58	68	71	72	78
Potassium	8.4	9.6	10.2	8.1	9.5	9.8	10.4	9.7	9.3	8.3	8.2	8.4
NO_2 & NO_3	0.05*	1.10	1.28	0.35	0.22	0.33	0.62	0.24	0.49	0.50	0.40	0.55
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.17	0.05*	0.05*	0.05*	0.05*
Fluoride	0.20	0.20	0.22	0.25	0.22	0.21	0.20	0.29	0.32	0.27	0.24	0.21
Chloride	19	24	24	19	24	23	24	20	20	21	22	23
Sulfate	103	122	116	66	84	91	92	78	67	74	86	89
Bicarbonate	357	386	411	242	271	291	337	293	277	283	309	322
Alkalinity T	293	317	337	198	222	238	277	255	227	232	254	264
Silica	6.4	7.3	8.1	7.5	6.9	7.5	8.5	8.6	11.6*	11.7	10.2	8.8
TN (Partic)	NOT DONE	0.02	0.02	NOT DONE	0.01*	0.08	0.01*	0.04	1.77	0.05	0.06	0.08
Herb Acids	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D	N.D.	N.D.	N.D.
Chlorinated pesticides	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D	N.D.	N.D.	N.D.
PCB's	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chloroform	0.190	0.050	0.040	0.095	0.150	0.100	0.160	0.120	0.200	0.130	0.145	0.074
Bromodi-chloromethane	0.0047	N.D.	0.0001	N.D.	0.024	0.0083	0.015	0.011	0.012	0.010	0.016	0.026
Dibromo-chloromethane	N.D.	N.D.	N.D.	0.0002	N.D.	N.D.	N.D	N.D.	N.D.	N.D.	N.D.	N.D.
Bromoform	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

TREATED WATER SURVEY
CAMROSE

Date	Jan 12/84	Feb 15/84	Mar 13/84	Apr 18/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 06/84	Oct 11/84	Nov 14/84	Dec 12/84
Other OrganoN/ OrganoP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Priority Pollutants	N22-L.D. N18-L.D.	P1-0.0028 N22-0.003 N18-L.D.	P15 L.D. P16 0.002 P21 0.0007 A8 0.0013 N22-0.001	N20 L.D. N22 0.0021	NOT DONE	N22 0.0045 A8 L.D.	A8 L.D. N18 L.D. N20 L.D. N22 0.001 P1 0.0027	N.D.	N18 L.D. N22 L.D.	A8 L.D. N18 L.D. N22-L.D.	N.D.	N18-L.D. N22-L.D. P15 0.0005 P19 0.0015 P22-0.0002 P23-0.0002 P24-0.0005

All parameters in mg/L except pH which is in pH units and Conductivity which is micromhos/cm.

N.D. - Not Detectable

L.D. - Detected at less than measurable limits

* - Less Than

TREATED WATER SURVEY
DRUMHELLER

Date	Jan 11/84	Feb 14/84	Mar 12/84	Apr 17/84	May 22/84	Jun 12/84	Jul 03/84	Aug 07/84	Sep 04/84	Oct 09/84	Nov 13/84	Dec 11/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.003	0.001*	0.001*	0.001*	0.001*
Copper	0.017	0.001*	0.001*	0.003	0.007	0.010	0.010	0.007	0.013	0.021	0.010	0.025
Nickel	0.011	0.005	0.004	0.005	0.003	0.003	0.007	0.001	0.005	0.004	0.001*	0.007
Cadmium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.002	0.001*	0.001*
Lead	0.005	0.003*	0.008	0.003*	0.006	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*
Zinc	0.003	0.002	0.018	0.003	0.007	0.007	0.008	0.005	0.045	0.017	0.001*	0.010
Beryllium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Aluminum	0.650	0.552	0.615	0.281	0.378	0.808	0.597	0.500	0.295	0.177	0.130	0.090
Arsenic	0.0004	0.0004	0.0004	0.0003	0.0002*	0.0004	0.0002*	0.0004	0.0008	0.0003	0.0002*	0.0002*
Selenium	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	NOT DONE		0.0002*	0.0002*	0.0002*	0.0002*	0.0002*
Manganese	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*
Chromium	0.004	0.001*	0.003	0.005	0.001*	0.003	0.003	0.006	0.003	0.006	0.001*	0.004
Vanadium	0.004	0.002*	0.004	0.002*	0.002*	0.004	0.002*	0.005	0.003	0.004	0.002*	0.004
Molybdenium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.004	0.004	0.005	0.001*	0.001*
Mercury	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*
DOC	NOT DONE								4.3	3.6	2.1	2.5
TC (Partic)	NOT DONE								0.24	0.31	1.01	0.61
DIC	NOT DONE								30.0	28.1	32.3	36.0
pH	8.2	9.0	8.8	9.1	8.1	8.3	8.0	7.9	7.8	7.8	7.7	7.7
Conductivity	368	310	328	303	435	445	448	383	364	359	372	420
Iron	0.02*	0.03	0.02*	0.05	0.02*	0.02*	0.12	0.02*	0.02*	0.02*	0.02*	0.02*
Calcium	29	16	23	19	34	37	36	28	14	25	31	39
TDS	201	166	181	175	257	254	259	210	199	199	213	239
Magnesium	17	16	16	10	15	14	15	14	29	13	14	16

TREATED WATER SURVEY
DRUMHELLER

Date	Jan 11/84	Feb 14/84	Mar 12/84	Apr 17/84	May 22/84	Jun 12/84	Jul 03/84	Aug 07/84	Sep 04/84	Oct 09/84	Nov 13/84	Dec 11/84
Hardness T	142	106	123	89	147	150	152	127	130	116	135	163
Sodium	15	16	16	24	42	32	34	22	25	30	24	23
Potassium	1.6	1.5	1.8	2.6	2.2	2.2	2.4	2.1	2.1	1.9	1.9	1.9
NO_2 & NO_3	0.23	0.27	0.17	0.05*	0.05*	0.06	0.08	0.05*	0.05*	0.05*	0.05*	0.05*
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Fluoride	1.22	1.14	0.89	0.74	0.17	0.17	1.21	1.00	1.07	1.20	1.20	1.05
Chloride	6	6	4	6	6	6	7	4	5	4	4	4
Sulfate	53	52	52	54	64	62	66	55	55	54	62	68
Bicarbonate	159	92	121	85	184	205	199	172	152	144	155	176
Alkalinity T	130	95	112	98	150	168	163	141	125	118	127	145
Silica	6.3	5.6	3.9	2.9	1.0	0.8	1.5	1.3	1.3 *	1.0	1.0	1.4
Carbonate	NOT DONE	12	8	17	5*	. . . . .	. . . . .	. . . . .	NOT DONE	. . . . .	. . . . .	. . . . .
Herb Acids	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chlorinated pesticides	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D	N.D.	N.D.	N.D.
PCB's	N.D.	N.D.	N.D.	N.D.	N D	N.D.	N D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chloroform	0.0090	0.025	0.011	0.035	0 100	NOT DONE	0.005	0.063	0.081	0.056	0.050	0.066
Bromodi-chloromethane	0.0010	0.0016	N.D.	N.D.	0.011	NOT DONE	0.0021	0.0028	N.D	0.0023	0.0029	0.0057
Dibromo-chloromethane	0.0010	0.0001	N.D.	N.D	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Bromoform	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D	N.D.	N.D.	N.D.	N.D.

TREATED WATER SURVEY
DRUMHELLER

Date	Jan 11/84	Feb 14/84	Mar 12/84	Apr 17/84	May 22/84	Jun 12/84	Jul 03/84	Aug 07/84	Sep 04/84	Oct 09/84	Nov 13/84	Dec 11/84
Other OrganoN/ OrganoP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Priority Pollutants	N18-L.D. N22-L.D.	P20-0.0001 N18-L.D. N22-0.0032	P4-L.D. P19-L.D. A8-L.D. N18-L.D.	P1 L.D. P19 L.D. N18 L.D. N22 0.002	P15 0.002	N22 0.0013 A8-L.D.	N18 L.D. N19 L.D. N22 0.002 P15 0.0002 P19 0.001 P21 0.0006 P22 0.0006	N.D.	P19 0.0002 P22 0.0002 N18 L.D. N22 0.0015	A8-L.D. N18 L.D. N22 L.D.	N22-L.D.	P15-0.0006 P19-0.0005 P22-0.0002 P23-0.0001 P24-0.0006 N18 L.D. N22 L.D.

All parameters in mg/L except pH which is in pH units and Conductivity which is in micro mhos/cm.

N.D. - Not Detectable

L.D. - Detected at less than measurable limits

* Less Than

TREATED WATER SURVEY
EDMONTON - E.L. SMITH

Date	Jan 12/84	Feb 14/84	Mar 14/84	Apr 17/84	May 24/84	Jun 14/84	Jul 05/84	Aug 07/84	Sep 05/84	Oct 10/84	Nov 16/84	Dec 14/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.007	0.006	0.001*	0.001*	0.001*	0.003
Copper	0.002	0.004	0.002	0.003	0.002	0.107	0.037	0.008	0.003	0.005	0.004	0.006
Nickel	0.004	0.004	0.001*	0.008	0.001*	0.001*	0.009	0.009	0.006	0.001*	0.003	0.005
Cadmium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.003	0.002	0.001*	0.002	0.001*	0.001*
Lead	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*
Zinc	0.002	0.001*	0.003	0.001*	0.002	0.002	0.004	0.001*	0.001*	0.011	0.002	0.011
Beryllium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Aluminum	0.620	0.514	0.722	0.324	0.361	0.165	0.278	0.380	0.519	0.317	0.551	0.680
Arsenic	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0003	0.0002*
Selenium	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	. NOT DONE .		0.0002*	0.0002*	0.0002*	0.0003	0.0002*
Manganese	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*
Chromium	0.001*	0.001*	0.005	0.001*	0.001*	0.004	0.010	0.011	0.005	0.004	0.001*	0.005
Vanadium	0.002*	0.002*	0.003	0.002*	0.002*	0.003	0.010	0.009	0.002*	0.003	0.003	0.002*
Molybdenium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.007	0.001*	0.001*	0.001*	0.004
Mercury	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0002	0.0001*	0.0001	0.0001*	0.0001*	0.0001*	0.0001*
DOC	NOT DONE	0.5	NOT DONE	0.4*	1.9	NOT DONE	1.3	0.3*	0.8	1.0	0.7	1.0
TC(Partic)	NOT DONE	0.11	NOT DONE	0.27	0.29	NOT DONE	0.70	0.18	0.84	0.06	0.34	0.54
DIC	NOT DONE	19.0	NOT DONE	12.8	15.9	NOT DONE	10.8	12.7	12.6	13.3	16.9	16.3
pH	8.3	8.4	8.7	8.3	8.2	7.9	8.5	8.5	8.3	8.5	8.2	8.4
Conductivity	252	254	244	262	291	303	259	267	249	267	245	253
Iron	0.04	0.02	0.03	0.03	0.02*	0.02*	0.03	0.02*	0.02*	0.02*	0.02*	0.02*
Calcium	21	25	26	28	33	33	27	28	29	30	25	27
TDS	136	138	133	140	162	169	144	117	136	148	137	139
Magnesium	11	10	10	9	9	10	11	10	9	10	11	11

TREATED WATER SURVEY
EDMONTON - E.L. SMITH

Date	Jan 12/84	Feb 14/84	Mar 14/84	Apr 17/84	May 24/84	Jun 14/84	Jul 05/84	Aug 07/84	Sep 05/84	Oct 10/84	Nov 16/84	Dec 14/84
Hardness T	98	104	106	107	119	124	113	111	109	116	108	113
Sodium	4	4	3	4	6	6	3	1*	1*	5	4	4
Potassium	0.6	0.5	0.6	0.8	1.1	1.2	0.8	0.7	0.5	0.7	0.7	0.6
NO_2 & NO_3	0.08	0.12	0.12	0.06	0.05*	0.07	0.05*	0.05*	0.05*	0.05*	0.05*	0.08
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Fluoride	0.27	1.00	1.12	0.93	0.94	0.97	1.00	0.92	0.96	0.94	0.94	0.96
Chloride	2	3	3	3	3	4	3	3	3	3	2	3
Sulfate	57	50	47	58	68	86	69	71	59	62	52	48
Bicarbonate	81	89	82	75	86	58	55	61	71	71	85	91
Alkalinity T	67	76	72	62	70	48	49	55	58	62	70	75
Silica	3.4	3.3	3.0	3.2	2.9	5.6	4.0	2.8	2.2 *	3.1	2.6	2.6
Carbonate	NOT DONE	5*	5*	NOT DONE	NOT DONE	NOT DONE	5*	5*	NOT DONE	5*	NOT DONE	5*
TN (partic)	NOT DONE	0.01*	NOT DONE	0.01*	0.39	NOT DONE	0.27	0.05	0.17	0.01*	0.06	0.03
Herb Acids	N.D.	N.D.	N.D.	N.D	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chlorinated Pesticides	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PCB's	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D	N.D.	N.D.	N.D.	N.D.	N.D.
Chloroform	0.0008	N.D.	N.D.	0.0005	0.006	0.006	0.001*	0.0011	0.0007	0.0009	0.0015	NOT DONE
Bromodi-chloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N D	N.D.	N.D.	N.D.	N.D.	NOT DONE
Dibromo-chloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	NOT DONE
Bromoform	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	NOT DONE

TREATED WATER SURVEY
EDMONTON - E.L. SMITH

Date	Jan 12/84	Feb 14/84	Mar 14/84	Apr 17/84	May 24/84	Jun 14/84	Jul 05/84	Aug 07/84	Sep 05/84	Oct 10/84	Nov 16/84	Dec 14/84
Other												
OrganoP/ OrganoN	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D	N.D.	N.D.	N.D.	N.D.	N.D.
Priority Pollutants	P15 0.0003 P21-0.0006 P23-0.0005 P24 0.0005 N18-L.D. N22-L.D.	N18-L.D. N22-0.0045	N18-L.D. N22-0.0035 P16-0.002	N18 L.D. N22 L.D. P19 L.D. P1-0.0003	NOT DONE	N22 0.001	A8 L.D. N22 L.D.	N.D.	N18 L.D. N22 0.0015	N18-L.D. N22-0.001 A8-L.D.	N22-L.D.	N22-L.D.

All parameters in mg/L except pH which is in pH units and Conductivity which is in microsiemens/cm.

N.D. Not Detectable

L.D. - Detected at less than measurable limits

* - Less Than

TREATED WATER SURVEY
EDMONTON - ROSSDALE PLANT

Date	Jan 12/84	Feb 15/84	Mar 14/84	Apr 17/84	May 24/84	Jun 12/84	Jul 05/84	Aug 10/84	Sep 05/84	Oct 10/84	Nov 14/84	Dec 12/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.006	0.006	0.001*	0.001*	0.004	0.001*
Copper	0.004	0.013	0.014	0.004	0.007	0.006	0.012	0.017	0.033	0.002	0.008	0.011
Nickel	0.003	0.005	0.001*	0.006	0.005	0.006	0.007	0.008	0.001*	0.001*	0.006	0.006
Cadmium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.002	0.002	0.001*	0.001*	0.002	0.001*
Lead	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*
Zinc	0.010	0.011	0.008	0.002	0.004	0.003	0.005	0.005	0.007	0.014	0.004	0.016
Beryllium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Aluminum	0.350	0.389	0.338	0.324	1.250	0.223	0.411	0.658	0.519	0.748	0.697	0.470
Arsenic	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*
Selenium	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	. NOT DONE .		0.0002*	0.0002*	0.0002*	0.0002*	0.0002*
Manganese	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*
Chromium	0.001*	0.005	0.003	0.001*	0.005	0.004	0.011	0.010	0.003	0.001*	0.005	0.005
Vanadium	0.002*	0.002*	0.003	0.002*	0.002*	0.002*	0.007	0.009	0.002*	0.002*	0.006	0.002*
Molybdenium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.008	0.006	0.001*	0.001*	0.004	0.004
Mercury	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*
DOC	NOT DONE	10.0	NOT DONE	0.4*	2.1	4.1	1.5	0.5	0.9	2.1	0.7	0.5
TC(partic)	NOT DONE	0.01*	NOT DONE	0.23	0.36	0.49	0.36	0.22	0.95	0.77	0.21	0.66
DIC	NOT DONE	19.0	NOT DONE	14.5	12.4	13.4	17.5	22.0	22.1	20.6	24.1	13.9
pH	8.3	8.2	8.2	8.3	8.7	7.9	8.1	8.1	8.2	8.3	8.4	8.3
Conductivity	247	267	255	258	277	274	277	310	294	293	304	249
Iron	0.02*	0.03	0.02*	0.02*	0.05	0.02*	0.24	0.02*	0.02*	0.02*	0.02*	0.02*
Calcium	22	27	26	27	27	29	31	34	39	32	35	23
TDS	132	150	136	139	152	148	151	170	162	161	166	130
Magnesium	11	11	10	10	9	7	11	12	10	11	11	11

TREATED WATER SURVEY
EDMONTON - ROSSDALE PLANT

Date	Jan 12/84	Feb 15/84	Mar 14/84	Apr 17/84	May 24/84	Jun 12/84	Jul 05/84	Aug 10/84	Sep 05/84	Oct 10/84	Nov 14/84	Dec 12/84
Hardness T	100	113	106	109	104	101	123	134	139	125	133	103
Sodium	5	7	4	4	6	5	2	1*	1*	6	5	4
Potassium	0.6	0.7	0.6	0.8	1.2	1.2	0.8	0.8	0.5	0.8	0.7	0.7
NO_2 & NO_3	0.10	0.10	0.14	0.08	0.05*	0.16	0.05*	0.05*	0.05*	0.05*	0.05*	0.08
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Fluoride	1.13	0.97	1.08	0.92	0.97	0.92	0.94	0.92	0.99	0.91	0.88	1.02
Chloride	3	5	4	4	3	4	4	3	4	3	3	2
Sulfate	51	51	50	52	68	71	56	63	50	54	52	50
Bicarbonate	79	85	82	82	66	62	94	114	116	110	114	80
Alkalinity T	65	70	67	67	63	51	77	94	95	90	98	65
Silica	4.4	3.8	3.1	3.3	2.6	5.1	3.9	2.0	1.6 *	2.4	2.9	3.0
Carbonate	NOT DONE	NOT DONE	NOT DONE	NOT DONE	5	. . . . .	. . . . .	NOT DONE	. . . . .	. . . . .	5*	NOT DONE
TN(partic)	NOT DONE	0.06	NOT DONE	0.01*	0.35	0.01*	0.03	0.02	0.01*	0.05	0.02	0.15
Herb Acids	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chlorinated pesticides	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PCB's	N.D.	N.D.	N.D.	N.D.	N.D.	N.D	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chloroform	0.0061	0.0011	0.0004	0.0003	0.004	0.0029	0.011	0.0019	0.001	0.0022	0.0015	0.0024
Bromodi-chloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D	N.D.	N.D	N.D.	N.D.	N.D.
Dibromo-chloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Bromoform	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

TREATED WATER SURVEY
EDMONTON ROSSDALE PLANT

Date	Jan 12/84	Feb 15/84	Mar 14/84	Apr 17/84	May 24/84	Jun 12/84	Jul 05/84	Aug 10/84	Sep 05/84	Oct 10/84	Nov 14/84	Dec 12/84
Other												
OrganoP/ OrganoN	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Priority Pollutants	N18-L.D. N22-L.D.	N18-L.D. N22-0.002	P1-0.005 P15 L.D. P16 0.0001 P20-0.0004 A8-L.D. N22 0.0015	N18 L.D. N22 0.0012	NOT DONE	N18 L.D. N22 L.D. A8 L.D.	A8 L.D. N18 L.D. N22 L.D.	N.D.	N18 L.D. N22 0.001 P21 0.0008	A8 L.D. N18 L.D. N22 0.0028	N.D.	N18-L.D. N22-L.D. P1-0.0036 P15-0.0004 P16-0.023 P19-0.001 P24-0.0004

All parameters in mg/L except pH which is in pH units and Conductivity which is in microsiemens/cm.

N.D. - Not Detectable

L.D. - Detected at less than measurable limits

* - Less Than

TREATED WATER SURVEY
FORT McMURRAY

Date	Jan 16/84	Feb 14/84	Mar 13/84	Apr 19/84	May 29/84	Jun 21/84	Jul 16/84	Aug 00/84	Sep 05/84	Oct 16/84	Nov 15/84	Dec 14/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.001*	0.004	0.001*	S	0.001*	0.001*	0.001*	0.005
Copper	0.039	0.081	0.019	0.019	0.022	0.053	0.014	A	0.035	0.069	0.043	0.034
Nickel	0.011	0.004	0.007	0.004	0.006	0.001*	0.001*	M	0.003	0.001*	0.005	0.009
Cadmium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	P	0.001*	0.001*	0.001*	0.002
Lead	0.006	0.003*	0.003*	0.003*	0.009	0.003*	0.003*	L	0.003*	0.003*	0.003*	0.003*
Zinc	0.005	0.004	0.005	0.018	0.033	0.006	0.001*	E	0.002	0.020	0.004	0.013
Beryllium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*		0.001*	0.001*	0.001*	0.001*
Aluminum	1.560	1.810	1.520	1.540	0.927	1.320	0.715	B	1.300	2.190	0.448	1.440
Arsenic	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0005	0.0002*	R	0.0002*	0.0002*	0.0002*	NOT DONE
Selenium	0.0005	0.0002*	0.0002*	0.0002*	0.0002*	NOT DONE	0.0002*	O	0.0002*	0.0002*	0.0002*	NOT DONE
Manganese	0.008*	0.008*	0.008*	0.008*	0.011	0.030	0.008*	K	0.008*	0.012	0.011	0.008*
Chromium	0.004	0.003	0.006	0.001*	0.003	0.007	0.001*	E	0.004	0.001*	0.001*	0.008
Vanadium	0.005	0.002*	0.003	0.003	0.002*	0.004	0.002*	N	0.002*	0.002*	0.002*	0.007
Molybdenium	0.004	0.001*	0.001*	0.001*	0.001*	0.006	0.001*		0.001*	0.001*	0.001*	0.004
Mercury	0.0001*	. NOT DONE .		0.0001*	0.0001*	0.0001*	0.0001*	I	0.0001*	0.0001*	0.0001*	0.0001*
DOC	. NOT DONE .		5.90	5.2	5.4	5.2	4.3	N	3.5	5.4	8.4	5.8
TC	. NOT DONE .		0.38	0.84	0.83	0.61	0.16		0.81	1.33	0.89	0.63
DIC	. NOT DONE .		30.6	28.1	27.8	27.4	29.9	T	30.5	31.3	34.7	26.5
pH	8.4	8.2	8.4	8.4	8.3	7.6	7.8	R	8.4	7.9	7.8	8.5
Conductivity	429	408	408	417	408	429	403	A	368	362	433	373
Iron	0.11	0.05	0.03	0.06	0.07	0.15	0.07	N	0.02*	0.14	0.10	0.05
Calcium	36	31	31	27	35	32	29	S	24	30	36	33
TDS	250	233	233	215	233	256	231	I	215	212	256	215
Magnesium	12	11	11	9	8	6	7	T	6	7	9	10

TREATED WATER SURVEY
FORT McMURRAY

Date	Jan 16/84	Feb 14/84	Mar 13/84	Apr 19/84	May 29/84	Jun 21/84	Jul 16/84	Aug 00/84	Sep 05/84	Oct 16/84	Nov 15/84	Dec 14/84
Hardness T	139	123	123	104	120	105	101	S	85	104	127	124
Sodium	36	37	35	39	41	45	47	A	48	39	45	31
Potassium	2.0	1.8	1.9	1.9	1.6	1.4	1.0	M	0.9	1.0	1.3	1.4
NO_2 & NO_3	0.12	0.14	0.16	0.06	0.05*	0.05*	0.05*	P	0.05*	0.05*	0.05*	0.06
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	L	0.05*	0.05*	0.05*	0.05*
Fluoride	1.26	1.24	1.15	1.12	1.04	0.99	1.03	E	0.97	0.90	0.84	0.74
Chloride	7	8	7	7	6	6	4		4	4	5	5
Sulfate	73	66	72	49	50	101	73	B	50	56	72	64
Bicarbonate	164	157	148	161	186	131	147	R	164	152	178	133
Alkalinity T	140	129	124	136	153	107	121	O	136	125	146	117
Silica	2.2	2.1	1.8	1.6	2.1	4.0	3.4	K	1.4*	3.0	4.5	2.2
Carbonate	5*	NOT DONE	5*	5*	. . .	NOT DONE	. . .	E	5*	NOT DONE	NOT DONE	5*
TN (partic)	. NOT DONE .		0.02	0.36	NOT DONE	0.04	0.09	N	0.01*	0.06	0.01*	0.08
Herb Acids	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.		N.D.	N.D.	N.D.	N.D.
Chlorinated pesticides	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	IN	N.D.	N.D.	N.D.	N.D.
PCB's	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	T	N.D.	N.D.	N.D.	N.D.
Chloroform	0.1600	0.025	0.035	0.045	0.045	0.075	0.076	R	0.075	0.060	0.070	0.045
Bromodi-chloromethane	N.D.	N.D.	N.D.	N.D.	0.006	0.012	N.D.	A N	N.D	0.0006	0.001	0.0017
Dibromo-chloromethane	N.D.	N.D.	N.D.	0.0001	N.D.	N.D	N.D.	S I	N.D.	N.D.	N.D.	N.D.
Bromoform	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	T	N.D.	N.D.	N.D.	N.D.

TREATED WATER SURVEY
FORT McMURRAY

Date	Jan 16/84	Feb 14/84	Mar 13/84	Apr 19/84	May 29/84	Jun 21/84	Jul 16/84	Aug 00/84	Sep 05/84	Oct 16/84	Nov 15/84	Dec 14/84
Other												
OrganoN/ OrganoP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.
Priority Pollutants	P18-0.0003	P21-0.0015	P1-0.004	N18 L.D.	N22 0.0016	N18 L.D.	N22 0.0013	NOT DONE	N18 L.D.	A8-L.D.	N22-L.D.	P1-0.0047
	P21-0.0006	N18-L.D.	P16-0.0008	N21-L.D.	P21 0.0003	N22-L.D.			N22 0.0023	N18 L.D.		P15-0.0002
	N18-L.D.	N22-0.017	P19 0.0002	N22 0.0017						N22-L.D.		P19-0.002
	N22-L.D.		P21-0.0007	P21 0.002								P22-0.0002
			N18 L.D.									P23-0.0002
			N22-0.0011									P24 0.0006

All parameters in mg/L except pH which is in pH units and Conductivity which is in microsiemens/cm.

N.D. - Not Detectable

L.D. - Detected at less than measurable limits

* - Less Than

TREATED WATER SURVEY
GRANDE PRAIRIE

Date	Jan 09/84	Feb 13/84	Mar 12/84	Apr 09/84	May 22/84	Jun 11/84	Jul 09/84	Aug 13/84	Sep 05/84	Oct 09/84	Nov 13/84	Dec 11/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.001*	0.003	0.001*	0.005	0.001*	0.001*	0.001*	0.001*
Copper	0.238	0.241	0.227	1.420	0.213	0.066	0.626	0.070	0.288	0.509	0.737	0.174
Nickel	0.004	0.005	0.003	0.003	0.006	0.005	0.004	0.005	0.003	0.005	0.003	0.005
Cadmium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.002	0.001*	0.001*
Lead	0.003*	0.004	0.003*	0.004	0.007	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*
Zinc	0.005	0.007	0.009	0.016	0.019	0.005	0.014	0.008	0.005	0.022	0.012	0.006
Berylium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Aluminum	0.060	0.040	0.030	0.061	0.055	0.020*	0.070	0.117	0.058	0.020*	0.043	0.070
Arsenic	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*
Selenium	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	.	NOT DONE	.	0.0002*	0.0002*	0.0002*	0.0002*
Manganese	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*
Chromium	0.001*	0.009	0.001*	0.003	0.001*	0.006	0.001*	0.008	0.004	0.005	0.004	0.005
Vanadium	0.002*	0.002*	0.002*	0.002*	0.002*	0.005	0.002*	0.006	0.003	0.005	0.003	0.004
Molybdenium	0.001*	0.001*	0.001*	0.001*	0.001*	0.004	0.001*	0.006	0.004	0.001*	0.001*	0.001*
Mercury	. . . .	NOT DONE	. . . . .		0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*
DOC	. . . .	NOT DONE	. . . . .		1.4	1.9	16.4	1.1	0.8	0.9	1.1	1.6
TC(partic)	. . . .	NOT DONE	. . . . .		0.23	0.34	0.26	0.55	0.90	0.34	0.01*	0.58
DIC	. . . .	NOT DONE	. . . . .		25.8	64.0	12.5	15.0	17.7	18.4	32.2	36.0
pH	8.2	8.2	8.4	8.2	8.2	8.1	7.8	8.2	8.2	7.6	7.6	7.7
Conductivity	435	407	421	402	347	322	294	284	301	316	386	358
Iron	0.02*	0.06	0.02*	0.02*	0.05	0.02*	0.01	0.02*	0.02*	0.02*	0.02*	0.02*
Calcium	59	57	50	52	50	46	41	40	43	42	56	52
TDS	236	230	229	222	201	183	176	158	168	176	219	197
Magnesium	14	13	12	12	8	7	6	5	7	8	9	10

TREATED WATER SURVEY
GRANDE PRAIRIE

Date	Jan 09/84	Feb 13/84	Mar 12/84	Apr 09/84	May 22/84	Jun 11/84	Jul 09/84	Aug 13/84	Sep 05/84	Oct 09/84	Nov 13/84	Dec 11/84
Hardness T	205	196	199	179	158	144	127	121	136	138	177	171
Sodium	8	8	9	14	9	6	5	1*	2	4	7	6
Potassium	0.6	0.7	0.8	0.9	0.8	0.9	0.05	0.5	0.6	0.6	0.6	0.7
NO_2 & NO_3	0.09	0.09	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Fluoride	0.96	1.00	1.04	1.02	0.87	0.90	0.98	0.94	0.91	0.85	0.78	0.84
Chloride	2	2	3	2	2	2	2	2	2	2	2	1*
Sulfate	37	42	38	40	63	68	89	70	66	74	64	40
Bicarbonate	234	217	214	205	137	107	65	79	96	92	162	177
Alkalinity T	192	178	176	168	112	88	53	65	79	75	133	145
Silica	4.0	4.0	3.8	3.3	2.7	2.7	2.6	2.5	2.6	3.3	3.9	3.8
TN (Partic)	. . . .	NOT DONE	. . . .		0.02	0.04	0.001*	0.08	0.75	0.01*	0.01*	0.01*
Herb Acids	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chlorinated pesticides	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PCB's	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chloroform	0.030	0.042	0.020	0.028	0.042	0.060	0.032	0.028	0.029	0.030	0.048	0.036
Bromodi-chloromethane	N.D.	N.D.	N.D.	N.D.	0.005	0.001	0.0024	0.0006	0.0008	N.D.	0.0009	N.D.
Dibromo-chloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Bromoform	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

TREATED WATER SURVEY
GRANDE PRAIRIE

Date	Jan 09/84	Feb 13/84	Mar 12/84	Apr 09/84	May 22/84	Jun 11/84	Jul 09/84	Aug 13/84	Sep 05/84	Oct 16/84	Nov 13/84	Dec 11/84
Other												
OrganoN/ OrganoP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Priority Pollutants	N18-L.D. N22-L.D.	N18-L.D. N22-0.002	N18-L.D. N22 0.0014 P1-0.004 P15-0.0001 P16-0.003 P19 0.0002	N20 L.D. N22 0.003 P1 L.D. P15 L.D.	P1 0.006 P15 L.D. P16 0.006	N22 0.0012	A8 L.D. N22 L.D.	P15 0.0003 P19-0.0004 P22-0.0013 P23 0.0006	P15 0.0003 P19-0.0003 P22 0.0009 P24-0.0002 N22 0.0016	P15-0.0001 A8 L.D. N18-L.D. N22 0.001	N.D.	P16-0.011 N22-L.D.

All parameters in mg/L except pH which is in pH units and Conductivity which is in microsiemens/cm.

N.D. - Not Detectable

L.D. - Detected at less than measurable limits

* - Less Than

TREATED WATER SURVEY
LETHBRIDGE

Date	Jan 10/84	Feb 14/84	Mar 12/84	Apr 16/84	May 22/84	Jun 11/84	Jul 03/84	Aug 07/84	Sep 09/84	Oct 10/84	Nov 14/84	Dec 10/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.003	0.001*	0.001*	0.001*	0.004
Copper	0.004	0.002	0.002	0.004	0.001*	0.007	0.005	0.006	0.003	0.004	0.001*	0.064
Nickel	0.004	0.005	0.003	0.010	0.001*	0.001*	0.001*	0.006	0.016	0.006	0.004	0.036
Cadmium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.002	0.001*	0.001*	0.001*	0.003
Lead	0.003*	0.003*	0.003*	0.003*	0.005	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.094
Zinc	0.005	0.002	0.005	0.002	0.003	0.006	0.003	0.002	0.003	0.011	0.001*	0.106
Beryllium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Aluminum	0.230	0.124	0.236	0.324	0.214	0.323	0.127	0.305	0.384	0.242	0.193	0.425
Arsenic	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0005	0.0004	0.0002*	0.0002*	0.0002*	0.0004	0.0003
Selenium	0.0002*	0.0003	0.0002*	0.0002*	0.0002*	. NOT DONE .		0.0002*	0.0003	0.0002*	0.0006	0.0002*
Manganese	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.011
Chromium	0.003	0.001*	0.001*	0.001*	0.001*	0.004	0.001*	0.005	0.001*	0.004	0.003	0.011
Vanadium	0.002*	0.002*	0.002*	0.003	0.002*	0.003	0.002*	0.005	0.002*	0.003	0.002*	0.006
Molybdenium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.005	0.001*	0.004	0.001*	0.006
Mercury	. . . NOT DONE . . .			0.0001*	0.0001*	NOT DONE	0.0001*	NOT DONE	0.0001*	NOT DONE	0.0001*	NOT DONE
DOC	. . . NOT DONE				1.4	1.1	0.4*	1.6	1.7	5.0	0.4*	0.4*
TC(partic)	. . . NOT DONE				0.06	0.28	0.30	0.11	0.12	0.49	0.31	1.04
DIC	. . . NOT DONE				33.0	27.7	28.1	28.0	29.8	25.1	34.7	44.0
pH	8.1	8.0	8.3	8.2	7.9	7.8	7.3	7.7	8.0	7.8	7.9	8.1
Conductivity	370	365	399	430	304	291	267	376	419	434	408	464
Iron	0.02*	0.05	0.02*	0.02*	0.05	0.02*	0.10	0.02*	0.40	0.02*	0.02*	0.02*
Calcium	39	40	42	49	40	35	33	29	34	42	45	54
TDS	201	196	219	241	171	158	141	210	238	247	237	270
Magnesium	12	13	15	15	10	9	9	15	17	17	15	18

TREATED WATER SURVEY
LETHBRIDGE

Date	Jan 10/84	Feb 14/84	Mar 12/84	Apr 16/84	May 22/84	Jun 11/84	Jul 03/84	Aug 07/84	Sep 09/84	Oct 10/84	Nov 14/84	Dec 10/84
Hardness T	147	153	167	184	141	124	119	134	155	175	174	209
Sodium	13	12	14	16	9	5	3	16	24	21	16	18
Potassium	1.0	0.7	0.9	1.1	0.8	0.8	0.7	1.7	1.5	1.5	0.9	1.1
NO_2 & NO_3	0.25	0.06	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.10	0.15
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Fluoride	1.04	0.88	1.05	1.06	1.10	0.84	0.94	0.92	0.89	0.90	0.90	0.98
Chloride	3	3	3	4	2	3	4	3	3	3	2	3
Sulfate	54	50	58	66	41	43	35	79	86	82	74	68
Bicarbonate	159	157	174	182	138	126	115	133	147	162	170	217
Alkalinity T	131	129	143	149	113	104	94	109	121	133	140	178
Silica	3.0	1.8	1.5	1.5	3.1	2.3	2.5	1.4	0.9*	1.3	2.8	2.4
TN(partic)	. . . .	NOT DONE	. . . .		1.62	0.11	0.03	0.02	0.73	0.01*	0.01*	0.04
Herb Acids	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chlorinated pesticides	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PCB's	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chloroform	NOT DONE	0.0012	0.0007	NOT DONE	0.004	0.0046	0.010	0.0041	0.0025	0.0014	0.0009	0.0024
Bromodi-chloromethane	NOT DONE	N.D.	N.D.	NOT DONE	N.D.	N.D.	0.028	N.D.	N.D.	N.D.	N.D.	N.D.
Dibromo-chloromethane	NOT DONE	N.D.	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Bromoform	NOT DONE	N.D.	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

TREATED WATER SURVEY
LETHBRIDGE

Date	Jan 10/84	Feb 14/84	Mar 12/84	Apr 16/84	May 22/84	Jun 11/84	Jul 03/84	Aug 07/84	Sep 09/84	Oct 10/84	Nov 14/84	Dec 10/84
Other												
OrganoN/ OrganoP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Priority Pollutants	A8-L.D. N18-L.D. N22-L.D.	N18-L.D. N22-L.D. P21-0.001	N18-L.D. N22-0.0011 P1 0.0044 P16 0.0002 P19 0.0012	N20-L.D. N22 0.0016	P1 0.005 P16 0.007	N22-0.0022	A8-L.D. N18-L.D. N22 0.0012 P19-L.D.	N22-L.D.	A8 L.D. N22 L.D.	A8 L.D. N18-L.D. N22-0.002	N18-L.D. N22-L.D.	N18-L.D. N22-L.D.

All parameters in mg/L except pH which is in pH units and Conductivity which is in microsiemens/cm.

N.D. - Not Detectable

L.D. - Detected at less than measurable limits

* - Less Than

[redacted]
Pollution Control Division
Alberta Environment

TREATED WATER SURVEY
MEDICINE HAT

Date	Jan 09/84	Feb 13/84	Mar 14/84	Apr 18/84	May 24/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 19/84	Oct 11/84	Nov 15/84	Dec 13/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.004	0.003	0.007	0.007	0.003	0.001*	0.001*	0.001*
Copper	0.017	0.013	0.010	0.012	0.008	0.012	0.014	0.012	0.010	0.008	0.008	0.023
Nickel	0.006	0.001*	0.005	0.005	0.001*	0.004	0.009	0.007	0.004	0.008	0.006	0.007
Cadmium	0.002	0.001*	0.001*	0.001*	0.001*	0.002	0.003	0.003	0.003	0.001*	0.002	0.001*
Lead	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*
Zinc	0.009	0.013	0.006	0.003	0.011	0.021	0.008	0.016	0.019	0.021	0.009	0.020
Beryllium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Aluminum	0.050	0.072	0.278	0.570	0.533	0.100	0.135	0.335	0.170	0.224	0.167	0.160
Arsenic	0.0002*	0.0002*	0.0002*	0.0002*	0.0004	0.0005	0.0002*	0.0004	0.0006	0.0003	0.0002*	0.0002*
Selenium	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	.	NOT DONE	.	0.0002*	0.0002*	0.0002*	0.0002*
Manganese	0.008*	0.008*	0.008*	0.008*	0.009	0.008*	0.008*	0.008*	0.009	0.008*	0.008*	0.008*
Chromium	0.005	0.003	0.004	0.001*	0.003	0.006	0.009	0.012	0.006	0.003	0.003	0.004
Vanadium	0.003	0.002*	0.003	0.005	0.006	0.005	0.010	0.008	0.006	0.002*	0.004	0.002*
Molybdenium	0.001*	0.001*	0.001*	0.001*	0.011	0.006	0.007	0.008	0.004	0.001*	0.001*	0.004
Mercury	. .	NOT DONE	. .	0.0001*	0.0001*	NOT DONE	0.0001*	NOT DONE	0.0001*	NOT DONE	0.0001*	NOT DONE
DOC	. .	NOT DONE	. .	3.7	1.9	1.3	2.6	NOT DONE	2.3	2.3	1.0	0.4*
TC(partic)	. .	NOT DONE	. .	1.24	0.53	0.59	0.24	NOT DONE	0.27	1.67	0.27	1.44
DIC	. .	NOT DONE	. .	29.3	33.5	24.3	24.3	NOT DONE	29.0	29.5	40.8	30.9
pH	7.7	7.8	7.9	8.1	8.1	8.0	7.5	7.8	7.7	8.0	7.8	8.0
Conductivity	462	407	398	410	450	378	292	354	424	494	531	476
Iron	0.02*	0.04	0.02*	0.05	0.06	0.02*	0.05	0.02*	0.02*	0.02*	0.02*	0.05
Calcium	51	49	46	34	35	37	31	28	33	38	55	52
TDS	265	220	226	217	256	218	163	199	244	278	316	276
Magnesium	16	12	13	15	17	14	11	15	18	19	19	17

TREATED WATER SURVEY
MEDICINE HAT

Date	Jan 09/84	Feb 13/84	Mar 14/84	Apr 18/84	May 24/84	Jun 13/84	Jul 01/84	Aug 08/84	Sep 19/84	Oct 11/84	Nov 15/84	Dec 13/84
Hardness T	193	172	168	147	157	150	123	132	156	173	215	200
Sodium	15	15	14	21	29	15	8	15	26	36	29	23
Potassium	1.8	1.5	1.3	1.3	1.2	1.8	1.1	2.0	2.1	2.2	2.3	1.7
NO_2 & NO_3	1.14	0.66	0.96	0.25	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.95	0.89
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Fluoride	0.15	0.15	0.14	0.16	0.18	0.14	0.13	0.14	0.14	0.14	0.15	0.12
Chloride	10	13	10	10	11	7	4	9	10	11	12	12
Sulfate	77	51	62	63	90	73	49	71	90	96	98	76
Bicarbonate	181	154	154	145	147	141	120	119	132	154	196	183
Alkalinity T	149	126	126	119	121	116	98	98	108	126	161	150
Silica	3.7	2.4	0.5*	0.5*	0.5*	0.6	0.5*	0.5*	0.5*	0.5*	1.4	1.4
TN(partic)	. . . . .		NOT DONE	. . . . .		0.31	0.25	0.03	0.01*	0.09	0.01*	0.03
Herb Acids	N.D.	N.D.	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D	N.D.
Chlorinated Pesticides	N.D.	N.D.	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PCB's	N.D.	N.D.	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chloroform	NOT DONE	0.006	0.015	0.025	0.017	0.035	0.022	0.054	0.044	0.043	0.0074	0.0031
Bromodi-chloromethane	NOT DONE	N.D.	N.D.	N.D.	0.004	0.013	0.0015	0.0051	0.0055	0.0076	0.0009	N.D.
Dibromo-chloromethane	NOT DONE	N.D.	0.0002	0.0004	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Bromoform	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

TREATED WATER SURVEY
MEDICINE HAT

Date	Jan 09/84	Feb 13/84	Mar 14/84	Apr 18/84	May 24/84	Jun 13/84	Jul 01/84	Aug 06/84	Sep 19/84	Oct 11/84	Nov 15/84	Dec 13/84
Other												
OrganoN/ OrganoP	N.D.	N.D.	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Priority Pollutants	N18-L.D. N22-L.D.	N18-L.D. N22-0.003	P1-0.0036 P16-0.0008 P19 0.0001 N18-L.D. N22-0.001	P19 L.D. A8 L.D. N18 L.D. N22 L.D.	P1 0.011 P16 0.012 P19 0.0001 P21-0.0006	P1 L.D. N18-L.D. N22-0.0024	A8 L.D. N22 L.D.	N.D.	N18 L.D. N22 0.0018 A8 0.0011 P19 0.0002	A8 L.D. N18-L.D. N22-L.D.	N22-L.D. P1-0.0002 P19-0.0005	N22-0.001 P1-0.0015 P15-0.0005 P19-0.0011 P22-0.0001 P24-0.0005

All parameters in mg/L except pH which is in pH units and Conductivity which is in microsiemens/cm.

N.D. - Not Detectable

L.D. - Detected at less than measurable limits

* - Less Than

TREATED WATER SURVEY
OLDS - HENDAY

Date	Jan 09/84	Feb 14/84	Mar 13/84	Apr 17/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 06/84	Oct 10/84	Nov 14/84	Dec 12/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.004	0.001*	0.001*	0.001*	0.004
Copper	0.008	0.008	0.005	0.008	0.035	0.011	0.008	0.013	0.032	0.009	0.009	0.017
Nickel	0.007	0.004	0.003	0.008	0.003	0.001*	0.001*	0.004	0.003	0.001*	0.003	0.008
Cadmium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.002	0.001*	0.001*	0.001*	0.002
Lead	0.008	0.003*	0.005	0.003*	0.007	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.005
Zinc	0.010	0.010	0.010	0.012	0.029	0.029	0.028	0.034	0.055	0.031	0.029	0.074
Beryllium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Aluminim	0.320	0.209	0.398	0.759	0.317	0.390	0.411	0.254	0.473	0.254	0.320	0.275
Arsenic	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0003	0.0002*
Selenium	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	NOT DONE		0.0002*	0.0002*	0.0002*	0.0004	0.0002*
Manganese	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*
Chromium	0.001*	0.003	0.003	0.001*	0.003	0.003	0.005	0.009	0.005	0.001*	0.003	0.008
Vanadium	0.002*	0.002*	0.002*	0.002*	0.003	0.002*	0.002*	0.006	0.003	0.002*	0.002*	0.005
Molybdenium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.005	0.004	0.001*	0.001*	0.006
Mercury	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*
DOC	NOT DONE								1.1	5.0	0.4*	1.0
TC	NOT DONE								1.10	0.33	0.24	0.62
DIC	NOT DONE								12.2	28.1	16.2	15.9
pH	8.2	8.0	8.1	8.3	8.0	7.8	7.9	7.7	8.0	8.0	7.8	7.9
Conductivity	337	322	318	340	325	310	294	246	260	276	306	315
Iron	0.02*	0.06	0.05	0.04	0.06	0.02*	0.02*	0.06	0.05	0.02*	0.03	0.02*
Calcium	32	28	29	35	33	31	29	27	31	26	30	37
TDS	186	173	179	188	181	173	164	139	146	151	174	179
Magnesium	14	15	12	12	13	12	11	9	9	11	12	12

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Pollution Control Division
Alberta Environment

TREATED WATER SURVEY
OLDS HENDAY

Date	Jan 09/84	Feb 14/84	Mar 13/84	Apr 17/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 06/84	Oct 10/84	Nov 14/84	Dec 12/84
Hardness T	137	132	122	137	136	127	118	104	114	110	124	142
Sodium	9	9	10	10	8	8	8	1*	1*	7	10	8
Potassium	1.2	1.2	1.3	2.0	1.8	1.6	1.5	1.0	0.9	1.2	1.2	1.1
NO_2 & NO_3	0.08	0.08	0.07	0.05*	0.05*	0.05*	0.05*	0.07	0.05*	0.05*	0.05*	0.05*
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Fluoride	0.12	0.12	0.12	0.14	0.11	0.12	0.09	0.07	0.11	0.11	0.09	0.08
Chloride	5	6	6	7	5	4	4	2	3	2	6	5
Sulfate	73	64	80	68	69	70	66	71	70	68	74	75
Bicarbonate	104	100	82	110	103	94	90	56	62	72	83	83
Alkalinity T	86	82	67	90	85	77	74	46	51	59	68	68
Silica	1.2	1.3	1.1	1.0	1.0	1.0	1.2	1.7	1.0 *	1.0	1.1	1.2
Herb Acids	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chlorinated pesticides	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PCB's	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chloroform	0.031	0.068	0.020	0.050	0.040	0.040	0.050	0.027	0.029	0.030	0.038	0.047
Bromodi-chloromethane	0.001	N.D.	N.D.	N.D.	0.0055	0.007	L.D.	0.0006	0.0008	0.0015	0.0014	0.0027
Dibromo-chloromethane	0.002	N.D.	L.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Bromoform	N.D.	N.D.	0.008	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

TREATED WATER SURVEY
OLDS HERDAY

Date	Jan 09/84	Feb 14/84	Mar 13/84	Apr 17/84	May 23/84	Jun 13/84	Jul 01/84	Aug 08/84	Sep 06/84	Oct 10/84	Nov 14/84	Dec 12/84
Other												
OrganoN/ OrganoP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Priority Pollutants	N18-L.D. N22-0.0018	P21 0.0089 N18-L.D. N22-0.0022	N22 0.0011 N18-L.D. P1-L.D. P15-0.0003 P19 L.D.	P1 L.D. P15 0.0003 P19 L.D. A8 L.D. B13 L.D. N18 L.D. N20 L.D. N22 0.0023	NOT DONE	P15 L.D. N18 L.D. N22 L.D.	A8 L.D. N22 0.0018 P15 L.D. P18-L.D.	P15 0.0007 P19 0.0004 P22 0.0028 P24-0.0012	P15 0.0006 P19 0.0003 P22 0.0024 P23-0.0011 B13 L.D. N18 L.D. N22* 0.0025	NOT DONE	N18-L.D. N22-L.D. P19-0.0001	N18-L.D. N22-L.D. P15-0.0014 P22-0.0006 P23-0.0004 P24-0.0014

All parameters in mg/L except pH which is in pH units and Conductivity which is in microsiemens/cm.

N.D. Not Detectable

L.D. - Detected at less than measurable limits

* Less Than

TREATED WATER SURVEY
RED DEER

Date	Jan 09/84	Feb 13/84	Mar 12/84	Apr 17/84	May 22/84	Jun 12/84	Jul 03/84	Aug 07/84	Sep 04/84	Oct 09/84	Nov 13/84	Dec 11/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.003	0.001*	0.001*	0.001*	0.001*
Copper	0.003	0.001*	0.006	0.007	0.001*	0.004	0.001*	0.003	0.001*	0.002	0.005	0.002
Nickel	0.004	0.001*	0.004	0.006	0.004	0.001*	0.003	0.004	0.003	0.006	0.004	0.005
Cadmium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001	0.001*	0.001*	0.001*	0.001*	0.001*
Lead	0.005	0.003*	0.003*	0.003*	0.004	0.003*	0.003	0.003*	0.003*	0.003*	0.003*	0.003*
Zinc	0.002	0.001*	0.005	0.004	0.003	0.004	0.001	0.002	0.006	0.015	0.009	0.007
Beryllium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Aluminum	0.150	0.177	0.139	0.338	0.225	0.312	0.750	0.305	0.387	0.412	0.345	0.160
Arsenic	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	0.0004	0.0010	0.0002*	0.0009	0.0003	0.0002*	0.0002*
Selenium	0.0002*	0.0002*	0.0002*	0.0002*	0.0002*	NOT DONE		0.0002*	0.0002*	0.0002*	0.0002*	0.0002*
Manganese	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*	0.008*
Chromium	0.001*	0.004	0.001*	0.001*	0.001*	0.003	0.003	0.003	0.003	0.001*	0.004	0.004
Vanadium	0.003	0.002*	0.002*	0.002*	0.002*	0.004	0.002*	0.006	0.002*	0.003	0.003	0.004
Molybdenium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.005	0.001*	0.001*	0.001*	0.001*
Mercury	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*
DOC	NOT DONE								1.0	1.4	0.6	1.0
TC (Partic)	NOT DONE								0.24	0.19	0.02	0.42
DIC	NOT DONE								12.3	14.3	15.9	15.1
pH	8.2	7.9	8.0	8.2	8.1	8.1	8.0	8.1	8.0	8.0	7.6	7.8
Conductivity	225	245	232	234	229	244	220	200	214	237	242	242
Iron	0.02*	0.03	0.02*	0.02*	0.05	0.02*	0.20	0.02*	0.05	0.02*	0.02*	0.02*
Calcium	14	18	14	15	17	18	15	14	20	17	19	17
TDS	122	128	126	120	123	132	112	102	112	127	128	127
Magnesium	14	13	13	12	12	11	10	10	10	12	12	12

TREATED WATER SURVEY
RED DEER

Date	Jan 09/84	Feb 13/84	Mar 12/84	Apr 17/84	May 22/84	Jun 12/84	Jul 03/84	Aug 07/84	Sep 04/84	Oct 09/84	Nov 13/84	Dec 11/84
Hardness T	92	98	88	87	92	90	79	76	91	92	97	92
Sodium	7	7	7	8	8	9	7	1*	2	9	7	6
Potassium	1.4	1.4	1.3	1.9	1.6	1.6	1.6	1.0	1.0	1.3	1.1	1.2
NO_2 & NO_3	0.08	0.06	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Fluoride	0.92	1.11	1.02	0.99	1.02	1.07	0.98	0.99	0.95	0.95	0.96	0.97
Chloride	2	3	3	4	5	5	5	3	4	5	4	4
Sulfate	48	45	50	39	45	45	33	41	42	45	46	48
Bicarbonate	72	82	75	82	70	86	80	64	67	75	78	78
Alkalinity T	59	67	62	67	57	70	66	52	55	62	64	64
Silica	4.0	3.9	4.0	2.1	3.8	3.5	3.0	3.9	3.5	3.3	3.3	4.3
TN (partic)	. . . . .					NOT DONE	. . . . .				0.01*	0.01*
Herb Acids	N.D.	N.D.	N.D	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chlorinated pesticides	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PCB's	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chloroform	0.025	0.014	0.015	0.030	0.030	NOT DONE	0.075	0.043	0.032	0.034	0.034	0.035
Bromodi-chloromethane	0.001	N.D.	N.D.	N.D.	0.004	NOT DONE	0.012	0.0014	0.001	0.0018	0.0017	0.0018
Dibromo-chloromethane	0.001	N.D.	N.D.	N.D.	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Bromoform	N.D.	N.D.	N.D.	N.D.	N.D.	NOT DONE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

TREATED WATER SURVEY
RED DEER

Date	Jan 09/84	Feb 13/84	Mar 12/84	Apr 17/84	May 22/84	Jun 12/84	Jul 03/84	Aug 07/84	Sep 01/84	Oct 09/84	Nov 13/84	Dec 11/84
Other												
OrganoN/ OrganoP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Priority Pollutants	N18-L.D. N22-L.D.	N18-L.D. N22-0.0032 P21-0.0008	P1 0.0042 P16 0.040 P21 L.D.	P1 L.D. P15 L.D. P16 L.D. P19 L.D. N18 L.D N20 L.D N22 0.0012	NOT DONE	A8 L.D. N22 0.0015	P15 0.001 N22 0.002	N22 L.D.	N18 L.D. N22 0.0013 P1 0.0048	A8 L.D. N18 L.D. N22 0.001 P15 0.0001	N.D.	N18-L.D. N22-L.D. P1-0.0034 P15 0.0002 P24 0.0002

All parameters in mg/L except pH which is in pH units and Conductivity which is in micromhos/cm.

N.D. - Not Detectable

L.D. - Detected at less than measurable limits

* - Less Than

TREATED WATER SURVEY
WETASKIWIN

Date	Jan 12/84	Feb 15/84	Mar 13/84	Apr 18/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 06/84	Oct 10/84	Nov 14/84	Dec 12/84
Cobalt	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.006	0.006	0.001*	0.001*	0.004	0.001*
Copper	0.091	0.200	0.152	0.003	0.358	0.017	0.099	0.253	0.127	0.182	0.120	0.183
Nickel	0.003	0.004	0.004	0.009	0.004	0.001*	0.008	0.007	0.005	0.001*	0.009	0.007
Cadmium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.002	0.002	0.001*	0.001*	0.001*	0.002
Lead	0.003*	0.004	0.003*	0.003*	0.005	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*	0.003*
Zinc	0.004	0.021	0.008	0.003	0.010	0.002	0.143	0.007	0.004	0.015	0.005	0.016
Beryllium	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Aluminum	0.240	0.728	0.781	0.896	0.569	0.296	0.473	0.444	0.400	0.429	1.040	0.920
Arsenic	0.0010	0.0005	NOT DONE	0.0002	0.0008	0.0006	0.0005	0.0008	0.0006	0.0007	0.0010	0.0012
Selenium	0.0002*	0.0002*	NOT DONE	0.0002*	0.0002*	NOT DONE			0.0002*	0.0002*	0.0002*	0.0002*
Manganese	0.047	0.053	0.045	0.051	0.034	0.030	0.049	0.120	0.028	0.025	0.032	0.101
Chromium	0.003	0.001*	0.004	0.001*	0.007	0.001*	0.010	0.009	0.004	0.003	0.005	0.004
Vanadium	0.002*	0.002*	0.003	0.002*	0.006	0.003	0.007	0.009	0.004	0.002*	0.006	0.004
Molybdenium	0.001*	0.001*	0.001*	0.001*	0.004	0.001*	0.007	0.007	0.008	0.001*	0.005	0.004
Mercury	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*
DOC	NOT DONE	9.6	10.7	NOT DONE	10.1	9.4	11.3	12.6	12.5	10.2	12.2	12.4
TC(Partic)	NOT DONE	0.25	0.61	NOT DONE	0.77	0.72	0.55	0.57	3.42	17.27	0.72	1.05
DIC	NOT DONE	68.0	66.5	NOT DONE	62.0	50.2	45.0	49.3	43.4	53.5	58.9	8.8
pH	8.0	7.6	7.4	7.8	7.5	7.5	7.5	7.7	7.6	7.6	8.1	7.7
Conductivity	768	805	733	533	694	575	532	604	599	680	670	685
Iron	0.17	0.16	0.16	0.04	0.25	0.05	0.14	0.10	0.07	0.18	0.21	0.18
Calcium	41	47	48	35	42	42	39	32	32	37	35	38
TDS	448	473	433	307	408	333	313	356	355	437	401	405
Magnesium	12	13	13	12	11	11	12	11	11	13	11	12

TREATED WATER SURVEY
WETASKIWIN

Date	Jan 12/84	Feb 15/84	Mar 13/84	Apr 18/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 06/84	Oct 10/84	Nov 14/84	Dec 12/84
Hardness T	152	171	173	137	150	150	147	125	125	146	133	144
Sodium	107	101	89	55	87	57	51	76	75	99	97	97
Potassium	8.0	8.7	10.5	10.0	8.5	9.5	10.2	9.6	10.0	9.6	8.9	9.0
NO_2 & NO_3	0.05*	0.16	0.31	0.12	0.05*	0.05*	0.05*	0.07	0.05*	0.05*	0.05*	0.06
Nitrite	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*
Fluoride	1.16	0.94	0.99	1.05	0.88	0.86	1.01	0.88	0.98	0.96	0.88	1.01
Chloride	28	23	21	17	20	13	13	21	18	21	19	19
Sulfate	90	127	107	84	101	99	84	91	103	137	96	92
Bicarbonate	329	309	291	190	280	207	210	234	210	243	272	280
Alkalinity T	270	254	239	156	230	170	172	192	172	199	223	230
Silica	4.1	3.6	4.7	3.3	2.9	3.1	3.5	6.3	4.9	2.6	2.4	3.9
TN(partic)	NOT DONE	0.01	0.04	NOT DONE	0.07	0.02	0.07	0.09	0.71	0.99	0.06	0.15
Herb Acids	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chlorinated pesticides	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PCB's	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chloroform	0.160	0.040	0.080	0.095	0.055	0.075	0.020	0.089	0.220	0.130	0.130	0.114
Bromodi chloromethane	0.0095	0.003	N.D.	N.D.	0.011	0.022	N.D.	0.0097	0.014	0.014	0.016	0.024
Dibromo-chloromethane	0.0046	0.0004	0.001	0.0009	0.0009	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.0013
Bromoform	0.0001	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

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Pollution Control Division
Alberta Environment

TREATED WATER SURVEY
WETASKIWIN

Date	Jan 12/84	Feb 15/84	Mar 13/84	Apr 18/84	May 23/84	Jun 13/84	Jul 04/84	Aug 08/84	Sep 06/84	Oct 10/84	Nov 14/84	Dec 12/84
Other												
OrganoN/ OrganoP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Priority Pollutants	N18 L.D. N22 0.0022	P1 0.001 N19 L.D. N22 0.0022	N18 L.D. N22 0.0020 P1 0.0022 P15 0.0001 P18 L.D. P19 0.0002	P1 L.D. P19 L.D. N18 L.D. N22 0.002	P1 0.001	P15 L.D. N18 L.D. N22 L.D.	A8 0.001 N18 L.D. N20 L.D. N22 0.001	N22 0.001	N18 L.D. N22 L.D.	A8 L.D. N18 L.D. N22 0.001	N.D.	N22 L.D.

All parameters in mg/L except pH which is in pH units and Conductivity which is in micromhos/cm.

N.D. - Not Detectable

L.D. - Detected at less than measurable limits

* Less Than